

WHAT IS CLAIMED IS:

- Sub A1*
- Sub 1*
- Sub 2*
- Sub 3*
- Sub 4*
- Sub 5*
1. A system, comprising:
at least one light source in a movable hand-held device;
at least one light detector that detects light from said light source; and
a control unit that receives image data from the at least one light detector,
wherein the control unit detects the position of the hand-held device in at least two-dimensions from the image data from the at least one light detector and translates the position to control a feature on a display.
2. The system of claim 1, wherein the at least one light detector is a digital camera.
3. The system of claim 2, wherein the digital camera captures a sequence of digital images that include the light emitted by the hand-held device, the sequence of digital images transmitted to the control unit.
4. The system of claim 3, wherein the control unit comprises an image detection algorithm that detects the image of the light of the hand-held device in the sequence of images transmitted from the digital camera.
- 20 5. The system of claim 4, wherein the control unit maps a position of the detected hand-held device in the images to a display space for the display.

6. The system as in claim 5, wherein the mapped position in the display space controls the movement of a feature in the display space.
7. The system as in Claim 6, wherein the feature in the display space is a cursor.
- 5 8. The system of claim 3, wherein the captured images are processed by the control unit for at least one other purpose.
9. The system of claim 8, wherein the at least one other purpose is selected from the group of teleconferencing, image transmission, and image recognition.
- 10 10. The system of claim 1, wherein said at least one light source is an LED.
11. The system of claim 1, wherein the at least one light detector comprises two digital cameras.
12. The system of claim 11, wherein the two digital camera each capture a sequence of digital images that include the light emitted by the hand-held device, each sequence of digital images transmitted by each camera to the control unit.
- 20 13. The system of claim 12, wherein the control unit comprises an image detection algorithm that detects the image of the light of the hand-held device in each sequence of images transmitted from the two digital cameras.

14. The system of Claim 13, wherein the control unit comprises a depth detection algorithm that uses the position of the light in the images received from each of the two cameras to determine a depth parameter from a change in a depth position of the hand-held device.

5 15. The system of claim 14, wherein the control unit maps a position of the detected hand-held device in at least one of the images from one of the cameras and the depth parameter to a 3D rendering in a display space for the display.

10 16. The system as in claim 15, wherein the mapped position in the display space controls the movement of a feature in the 3D rendering in the display space.

17. The system of claim 1, wherein the at least one light detector is at least one digital camera and the hand-held device comprises two light sources.

15 18. The system of claim 17, wherein the digital camera captures a sequence of digital images that include the light from the two light sources of the hand-held device, the sequence of digital images transmitted to the control unit.

20 19. The system of claim 18, wherein the control unit comprises an image detection algorithm that detects the image of the two light sources of the hand-held device in the sequence of images transmitted from the digital camera.

20. The system of claim 19, wherein the control unit determines at least one angular aspect of the hand-held device from the images of the two light sources.

21. The system of claim 20, wherein the control unit maps the at least one angular aspect of the hand-held device as detected in the images to a display space for the display.

22. The system of claim 1, wherein the light source emits at a wavelength falls that falls within the visible and infrared light spectrum.

23. A system comprising:
two or more movable hand-held devices, each hand-held device comprising at least one light source,
at least one light detector detecting light from the at least one light source of each of the two or more hand-held devices
a control unit that receives image data from the at least one light detector,
wherein the control unit detects the positions for each of the two or more movable hand-held devices in at least two dimensions from the image data from the at least one light detector and translates the positions for each of the two or more movable hand-held devices to separately control two or more respective features on a display.

24. The system of claim 23, wherein the at least one light source of the two or more hand-held devices each turn on and off at a flashing frequency and emit light at a flashing wavelength.

25. The system of claim 24, wherein the flashing frequencies of the at least one light source of the two or more hand-held devices are different.

26. The system of claim 24, wherein the flashing wavelengths of the at least one light source of the two or more hand-held devices are different.

27. The system of claim 26, wherein the flashing wavelength falls within the visible and infrared light spectrum.